CLAIMS

What is claimed is:

1. An optical fiber assembly, comprising:

a fiber bundle having an outer diameter; and

a first optical fiber having an outer diameter that is at least equal to the outer diameter of the fiber bundle, wherein the fiber bundle is spliced to the first optical fiber.

2. The optical fiber assembly according to claim 1, wherein the fiber bundle comprises at least one of (1) multimode pump fiber pigtails; and (2) one or more single mode, few moded or multimode fibers carrying light at a signal wavelength.

3. The optical fiber assembly according to claim 1, wherein the fiber bundle comprises a plurality of fibers arranged about a core fiber, and the core fiber is one of a single mode fiber, a few-moded fiber and a multimode fiber.

4. The optical fiber assembly according to claim 1, wherein the fiber bundle comprises a plurality of fibers arranged about a core fiber, and the plurality of fibers are arranged in a predetermined pattern around the core fiber.

5. The optical fiber assembly according to claim 4, wherein a holder maintains the fiber bundle in a hexagonal arrangement.

6. The optical fiber assembly according to claim 4, further comprising a plurality of filler fibers that maintains the fiber bundle in said predetermined pattern.

7. The optical fiber assembly according to claim 1, further comprising a capillary that maintains the fiber bundle in a predetermined arrangement.

8. The optical fiber assembly according to claim 7, wherein the capillary has a lower refractive index than the cladding of the fibers in the fiber bundle.

9. The optical fiber assembly according to claim 1, wherein the first optical fiber has one of a single mode core, a few-moded core, and a multimode core; and

wherein the first optical fiber is a double clad fiber.

10. The optical fiber assembly according to claim 1, wherein the first optical fiber is a double clad fiber with a core doped with rare earth ions.

11. The optical fiber assembly according to claim 1, wherein the first optical fiber comprises a taper in a direction away from the splice between the first optical fiber and the fiber bundle.

12. The optical fiber assembly according to claim 11, further comprising a second optical fiber, wherein the taper is sized so the first optical fiber can be spliced to the second optical fiber.

13. The optical fiber assembly according to claim 12, wherein the second optical fiber has one of a single mode, few moded and multimode core.

14. A cladding pumped optical fiber device comprising:

a cladding pumped fiber;

a plurality of optical sources for optically pumping the cladding pumped

fiber;

a plurality of multimode fibers optically coupling the optical sources to the cladding pumped fiber, each multimode fiber having a first end coupled to one of the plurality of optical sources and a second end coupled to the cladding pumped fiber for coupling multimode light into a cladding of the cladding pumped fiber; and

a multimode core fiber coupled to the cladding pumped fiber for coupling single mode light,

wherein the plurality of multimode fibers and the multimode core fiber are bundled together into a fiber bundle, and the fiber bundle being tapered to a reduced cross sectional area prior to being coupled to the cladding pumped fiber.

15. The cladding pumped optical fiber device according to claim 14, wherein the taper of the fiber bundle acts as a mode-filter used to propagate single mode light in the multimode core fiber.

16. A method of producing an optical fiber assembly, comprising:

providing a fiber bundle having an outer diameter; and

splicing a first optical fiber to said fiber bundle; wherein said first optical fiber has an outer diameter which is at least equal to the outer diameter of said fiber bundle.

17. The method claimed in claim 16, wherein the fiber bundle is first fused at one location and then cleaved at the fused location to form fiber bundle ends for splicing.

18. The method claimed in claim 16, wherein said splicing step is carried out by a fusion arc.

19. The method claimed in claim 16, wherein said splicing step is carried out using resistance heating.

20. The method claimed in claim 18, further including the step of providing a capillary surrounding said fiber bundle and said first optical fiber, providing arc-entrance apertures in said capillary, and fusing said capillary to said fiber bundle and said first optical fiber during said splicing.